

E. E. STRAWN.
PAPER CUTTING DEVICE.
APPLICATION FILED SEPT. 30, 1919.

1,398,474.

Patented Nov. 29, 1921.

2 SHEETS—SHEET 1.

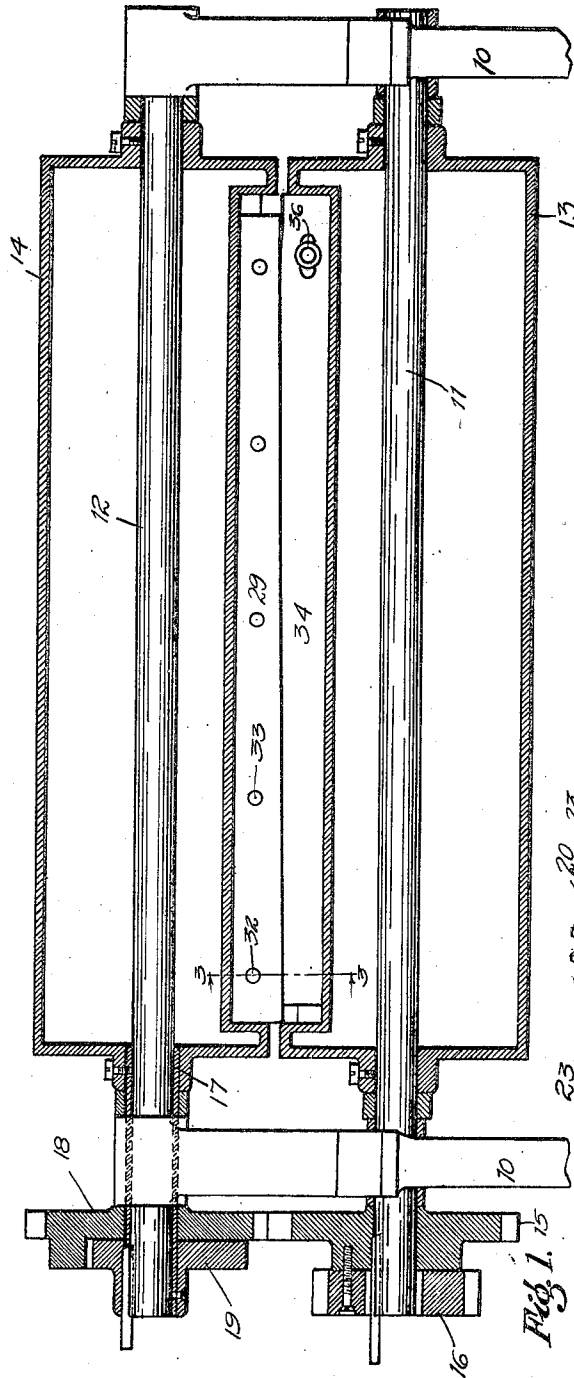


Fig. 1.

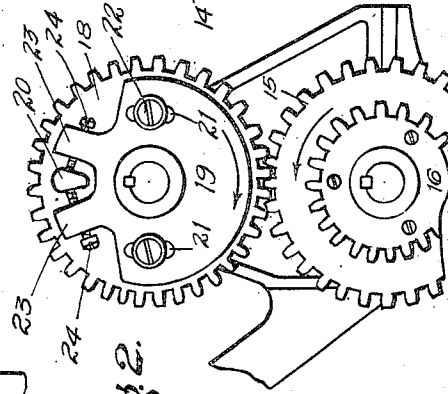


Fig. 2.

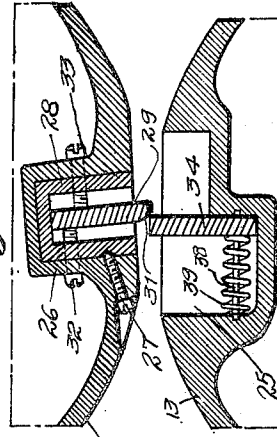


Fig. 3.

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2 SHEETS—SHEET 2.

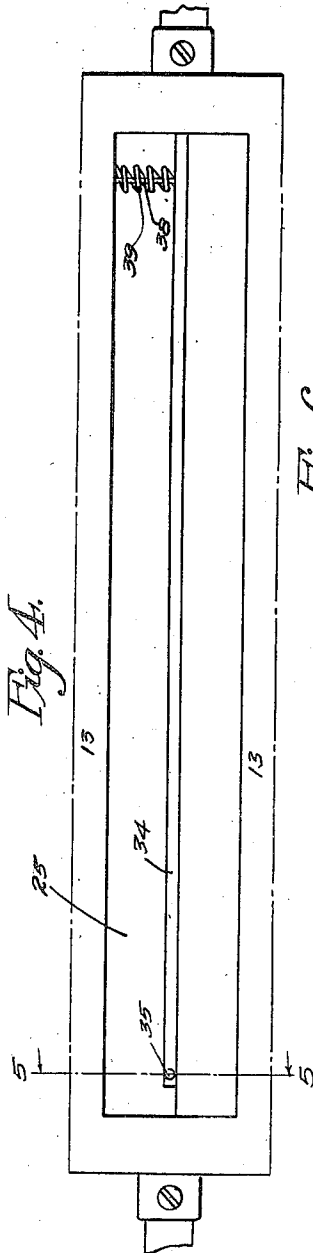


Fig. 4.

Fig. 6.

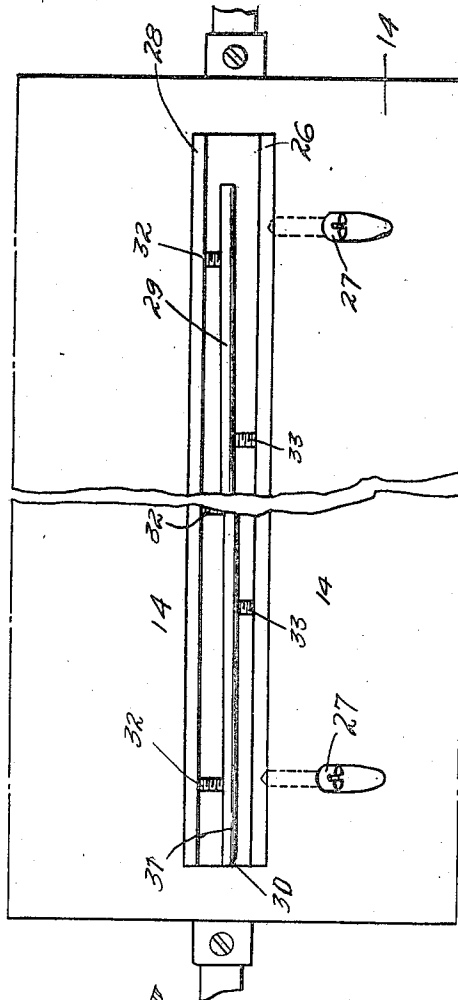
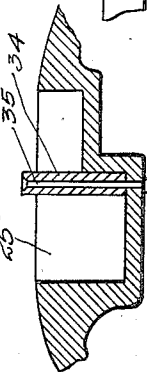


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PAPER-CUTTING DEVICE.

1,398,474.

Specification of Letters Patent.

Patented Nov. 29, 1921.

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To all whom it may concern:

Be it known that I, ERVIN E. STRAWN, a citizen of the United States, and a resident of Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Paper-Cutting Device, of which the following is a specification.

The object of my invention is to provide a paper cutting device of simple, durable and inexpensive construction.

More particularly it is my object to provide a paper cutting device of the rotary type adapted to be used in connection with printing machines or paper handling machines, and to be operated with a continuous rotary motion rather than an intermittent motion for permitting the handling of the paper at a maximum speed.

A further object is to provide such a paper cutting device having opposite cylinders, carrying paper cutting blades, said parts having suitable adjustment whereby a proper shear cut may be had.

Still a further object is to provide such a paper cutting device in which the cutting blades are so mounted and engaged and operated as to give a shear cut.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a transverse, vertical, sectional view through a paper cutting device embodying my invention.

Fig. 2 shows an end elevation of part of the device.

Fig. 3 shows a vertical, sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 shows a plan view of the longitudinal recess in one of the cylinders, showing the blade mounted therein.

Fig. 5 shows a sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 shows a plan view partly broken away of the portion of the other cylinder showing the blade mounted therein.

In the accompanying drawings I have used the reference numeral 10 to indicate generally the frame members on which my cutter device is mounted.

My cutter device includes a shaft 11

mounted in the frame members 10 in suitable bearings. Spaced from the shaft 11, and preferably parallel therewith is a shaft 12.

On the shaft 11 is a hollow cylinder 13, and on the shaft 12 is a hollow cylinder 14.

On one end of the shaft 11 is fixed a gear 15 adjacent to which is a gear 16 designed to be connected with some source of power.

On one end of the shaft 12 is a sleeve 17, fixed to the cylinder 14 and rotatably mounted on the shaft 12.

On the sleeve 17 is fixed a gear 18 in mesh with the gear 15.

Fixed on the shaft 12 and to the sleeve 17 is a disk segment or the like 19.

On the gear 18 is a laterally extending lug 20. The gear 18 is connected with the disk 19 in the following manner.

In the disk 19 are elongated slots through which are extended screws 22 screwed into the gear 18 for locking the gear 18 and the disk 19 together.

On the disk segment 19 are opposite ears 23 arranged on opposite sides of the lug 20.

Mounted in the ears 23 are set screws 24 designed to engage the opposite sides of the lug 20.

It will be seen that by loosening the screws 22 and then adjusting the screws 24, the cylinder 14 may be adjusted somewhat rotatably with relation to the shaft 12. By this rotation the cutting blades, hereinafter referred to, may be adjusted with relation to each other.

In the outer surface of the cylinders 13 and 14 are longitudinal channels 25 and 26.

Received in the channel 26 and locked in position therein by means of set screws 27, is a channel member 28.

Received in the channel member 28 is a cutter blade 29 of suitable thickness, the cutting edge 30 of which is beveled at one end as at 31.

Mounted in the walls of the channel 26 and extending through the walls of the channel member 28 is a series of set screws 32 and 33. The set screws 32 are staggered with relation to the set screws 33 and the screws 32 and 33 engage opposite sides of the cutting blade 29.

The cutting blade 29 may be of slightly greater width radially of the cylinder 14 at its right-hand end than at its left-hand end as shown in Fig. 1, and may be adjusted

circumferentially of the machine by means of the set screws 32 and 33.

Received in the channel 25 abutting against a longitudinal shoulder therein is another cutter blade 34 which may be secured in the channel at one end, for instance by means of a pin 35, whereby a slight pivotal movement of the plate 34 is permitted. The pin 35 is mounted radially of the cylinder 13. At the opposite end of the blade 34 from the pin 35, the blade 34 is provided with an elongated slot 36. Extending across the channel 25 and through the slot 36 is a pin or the like 38.

Mounted on the pin 38 is a coil spring 39, whereby one end of the blade 34 is yieldingly held at one limit of its springing or pivotal movement. The blades just described are of somewhat resilient material.

In the actual operation of my improved paper cutting machine, the cylinders may be operated in the direction indicated by the arrows in Fig. 2. When the blades come together the beveled corner of the blade 29 engages the blade 34 so as to prevent the blades from injuring each other, and to cause them to slide past each other a very slight distance with a shearing motion. The blade 29 may be set so that one end is in slightly different position circumferentially of the cylinder 14 from the other end.

The blades may be adjusted to accomplish the purpose, and when properly adjusted the blades will cut the paper with a true transverse cut with a shearing motion, and with a yielding engagement which is highly desirable in an operation of this kind.

It is obvious that the blade 29 may be adjusted circumferentially of the cylinder 14 and that the cylinder 14 may be adjusted slightly circumferentially of the shaft 12 for securing the proper adjustment of the cutter blades with relation to each other.

Changes may be made in the construction and arrangement of the parts of my improved paper cutting device without departing from the essential features and purposes of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

In fact I have several forms of my invention, and the form shown herein is simply illustrative.

It is desirable that the blades should have some resiliency, and that one should have yielding engagement with the other during the making of the shearing cut. I have found that it is desirable that the cutting edge of one blade should be arranged slightly inclined longitudinally of the cylinder in which the blade is mounted, and that one blade should have its ends varied somewhat with relation to each other circumferentially of the machine insuring a proper shearing cut, and at the same time insuring the securing of a straight, transverse cut across the paper.

I claim as my invention:

1. In a device of the class described, a pair of members mounted adjacent to each other for rotation, blade holding devices on said members, a blade mounted in one of said blade holding devices, having its cutting edge inclined radially and circumferentially from parallel with the axis of rotation of its holder, a blade mounted in the other of said blade holding devices, having one end fixed and the other end mounted for yielding movement, one of said blades having a beveled corner at its point of first engagement with the other of said blades, whereby in the rotation of the blade holding members, the blades will be brought to sliding shearing engagement beginning at the end of the blade having the beveled corner.

2. In a paper cutting device; a pair of parallel cylinders mounted for rotation adjacent to each other; a cutter blade mounted in one of said cylinders and projecting therefrom; a second cutter blade mounted in the other of said cylinders and projecting therefrom for coacting with the first cutter blade; one of said cutter blades being arranged with its cutting edge inclined from position parallel with the axis of its cylinder circumferentially of said first cylinder, one of said blades being mounted for yielding shearing engagement with the other of said blades; one of said blades having its cutting edge inclined from position parallel with the axis of rotation of its cylinder radially of its cylinder; shafts on which said cylinders are mounted; gearing devices for operatively connecting said shafts; and means for adjusting one of the gearing devices circumferentially of its shaft.

Des Moines, Iowa, May 10, 1919.

ERVIN E. STRAWN.